

THE EVOLUTION OF CITY LABELLING IN THE LITERATURE

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Abstract

Research purpose. Various city labels have become increasingly popular both in literature as well as in urban policy-making. It has become relatively common that cities make a proclamation that they either are or would at least like to become, smart, sustainable, digital, creative, intelligent among other things. These proclamations have become popular for the purpose of solving complex urban problems, electoral gains at the local level, and also for marketing reasons. Nevertheless, those city labels often have a blurry line, in terms of what each label represents and should stand for. It is evident that utilising appropriate city categories and labels has become a rather complex issue. Consequently, this paper would like to investigate this issue. The paper questions the dynamics how different city labels were used throughout the time and to which academic fields are specific city labels related to.

Design / Methodology / Approach. We would like to investigate the dynamics how different city labels were used throughout time and which academic fields are specifically related to labels most frequently. For this purpose, we will focus on the content analysis of topics and titles within the Web of Science Core Collection database.

Findings. The evidence suggests that the labelling depends also on the time span we are scrutinising and also on the scientific field the literature being related to. Some city labels have become popular just recently, and their appearance in specific academic fields is the differentiator. For instance, the label ‘smart city’ is currently the most important label. But it has become popular only several years ago, and this label appears most frequently in the ‘technical’ literature. The research indicates that city labelling is a rather dynamic process, since some labels are gaining and other labels are losing their popularity in time.

Originality / Value / Practical implications. The debate exists in the literature on the suitability of different city labels and terminology utilised. Some labels derive from top-down perspective, others derive from bottom-up perspective, some labels are more holistic than others, some are politically more acceptable than others, etc. Simultaneously, those city labels are often used interchangeably and sometimes they overlap. This paper would like to contribute to the scientific literature by providing additional evidence and explanations on the utilisation of particular city labels.

Keywords: Urbanisation; Cities; City labels; Content analysis; Smart city.

JEL codes: M39; O35.

Introduction

Various city labelling concepts or categories have become increasingly popular both in literature as well as in urban policy-making. It has become relatively common that cities make a proclamation that they are, or they would at least like to become, smart, sustainable, digital, creative, intelligent, etc. One of the reasons for this lies in the increasing urbanisation, where cities around the globe are growing rapidly. This creates large challenges on the environment, sustainability and governance that cities need to cope with (see World Cities Report, 2016). More than half of the world’s population now live in urban areas, and we can observe the growth of cities, with some of them becoming megacities, which generates economic, social and physical problems, stemming from multiple and diverse stakeholders and socio-political complexity of these large units (Chourabi *et al.*, 2012).

The recognition of this trend and accompanying problems require city administrations to develop new tools and ways to manage challenges related to these new problems, including also innovative and more efficient services, increased productivity, transparency and sustainability (Albino *et al.*, 2013; Gil-Garcia *et al.*, 2015). This means that smartness, intelligence, digitalization etc. are needed when taking up urban planning and policy-making; so cities responded with initiatives of this kind. Moreover, these

initiatives are not limited solely to city administrations, but we can observe an increased global attention to build and improve capabilities for solving new emerging problems, and this is reflected also in the scientific literature.

In order to cope with the challenges and also to increase competitiveness and visibility, cities started to proclaim the above-mentioned initiatives, concepts and labels. However, it is worth noting that these concepts and labels have a rather fuzzy nature, and, among others, they have a blurry line among them, although a heavy debate exists in the literature on the suitability of terminology used. Some labels might focus on technology, some on the development of human capital, some on the development of infrastructure, etc. They share the commonality that they attempt to design and describe a roadmap for the development of the cities in the future (Gil-Garcia *et al.*, 2015). Based on this premise, it happens quite often that these labels are used as synonyms also due to the fact that there is no uniform definition for the majority of labels and terminology is often used inconsistently. Thus, some overlapping and cross-fertilisation of the concepts has been acknowledged in the literature (de Jong *et al.*, 2015).

It clearly becomes evident that city labelling itself as well as the proper utilisation of terminology in the literature has become a “wicked” or complex issue. Consequently, this paper investigates the background and some potential patterns that contribute to or build up this wicked issue. Put differently, this paper would like to investigate the dynamics and potential changing patterns, how different labels are used now and were used in the past. Since the problem exists also on accepted definitions of different labels, this study focuses also on the role of different academic fields in the promotion and utilisation of specific labels. This means that we analyse terminology from frequency, time dimension as well as from academic field perspective. It needs to be stressed that this study does not go into details in discussing the differences in the meaning of the labels, but solely focuses on the differences in their appearance in the literature.

Literature Review

It has been already pointed out that there is a debate on the meaning and proper utilisation of different city labels, which steer up from self-proclamations based on political and economic incentives of city administration, a trend sometimes referred to as the ‘urban labelling’ phenomenon (see Hollands, 2008). This labeling has become very popular recently not just in urban policy-making, but also scientific literature has produced a lot of outputs tackling this issue. This has been the consequence of the efforts to improve social, economic and environmental conditions in the cities as well as to boost their attractiveness (de Jong *et al.*, 2015). The result is that several city categories or labels have been developed, which have entered the developmental policy-making discourse.

This discourse focuses on the investigation how these labels can be differentiated, what is the appropriate utilisation of specific labels, and how actually the terminology and labels have evolved (Dameri and Cocchia, 2013; de Jong *et al.*, 2015). For instance, the discourse can be observed in the statements of some authors who argue that various city labels can be taken as synonyms (Swarnalakshmi & Thanga, 2017) that there are no uniform definitions and terminology is often used inconsistently (Albino *et al.*, 2013). All these city labels should have pretty much the same meaning, as all relate to ‘smartness’ of the city, and this might arise in the form of sustainability, digitality and intelligence, thus depending only on the meanings and understandings of different words (Cocchia, 2014).

On the other hand, some other authors argue that those categories are actually not conceptually interchangeable and that some labels or concepts are more (or have become) dominant in the literature, although they still argue in favour of evident overlapping between the labels (de Jong *et al.*, 2015). Thus, some concepts should be narrower than others under what they encompass, although the literature does not provide a uniform answer to this issue. Ben Letaifa (2015) develops a hierarchy of labels and states that, for instance, the concept of smart city builds upon both intelligent and creative city, where the former is ‘historically’ the oldest one deriving from top-down perspective and focusing on technology, whereas the latter derives from bottom-up perspective, thus community-based and private sector initiatives are its core. Subsequently, smart city concept should be, for instance, a combination of both intelligent and creative city, representing balanced relationship among technology, institutions and people. More straightforward, Trindade *et al.* (2017) argue that smart city concept builds on the

intelligent city concept, where specific focus is given to the intelligent use of digital information. Silva *et al.* (2018) argue slightly differently that smart city concept represents an agglomeration of other concepts that utilise ICT, like the aforementioned digital city, intelligent city and sustainable city, but it is more holistic in nature. In contrast, Carta (2015) develops a slightly different trajectory, where smart city concept is an upgraded version of the creative city (it could be labeled also Creative City 3.0). And this is just portrayed to see the complexity of issue, as numerous other references on the relationships among different city labels could be added to the discussion.

It is evident that there is a problem with marking distinctions among different labels, but we have the same problem with obtaining the uniform definitions of specific labels. For instance, Albino *et al.* (2013) have provided a list of more than 20 different definitions of the concept of smart city. They also argue about the confusion that exists when defining other similar concepts. Since the list of labels has increased in time, often reflecting also the developments in academic fields and the installment of the so-called buzzwords that sporadically became popular, it is of importance to investigate how these labels are actually represented in the scientific literature. Since all of those labels and categories tend to have a positive connotation and are used to describe the wish for urban development and modernisation, the main issue is why are we using different labels. Taking this into consideration, the paper does not focus on the discussion about the definition and meanings of different labels, but instead focuses on the presentation of evidence how often they are used in the literature. This has become important also from the perspective that city labels, and even their combinations, are constantly emerging in the literature. This suggests that these labels have often evolved simply to be terminologically innovative.

Methodology

The methodology of the paper builds upon the data collection tools, where the source of scrutinisation is Web of Science Core Collection (see WoS, 2019), which due to its size and influence often serves as a database for scrutinising the development of certain scientific field. This study focuses on the so-called manifest content approach (Berelson, 1952), which means that words or phrases are counted as they appear in the literature. This approach has become increasingly popular in content analysis research due to the advances in methods and technology, offering higher reliability of research outputs, although it has certain limitations related to validity issues (see Dooley, 2016).

We have scrutinised the appearance and frequency of the labels digital city, intelligent city, creative city, smart city, sustainable city, green city, clean city, smart sustainable city, knowledge city, strategic city, ubiquitous city, eco city, information city, resilient city and low carbon city, as they appear in topics category of research listed within the Web of Science Core Collection database, and no limitation was set on the time span of coverage.

Specifically, this research builds upon the existing endeavours in this field (e.g., de Jong *et al.*, 2015) by widening the time span of the database scrutinisation (from its beginnings till February 2019) and by adding additional city labels and categories. The study includes the final list of 15 city labels, thus trying to include the majority of existing city labels as they appear in the scientific literature. Moreover, the variations in coverage within different academic fields, i.e. categories, associated with those labels is also taken into account. Thus, the study would like to upgrade the previous research not just by exploring the recent developments and potential changes in labelling patterns, but also by adding some potential new labels that might have emerged recently.

Finally, it needs to be stressed that this content research has limits, since it builds only on the investigation of one database although this collection includes full-text articles, reviews, editorials, chronologies, abstracts, proceedings (journals and book-based) and technical papers. Moreover, the study does not focus on the analysis of specific content relationship among different labels, since this would go beyond the purposes of the research, which focuses mainly on the providing evidence on the appearance of labels in the scientific literature, taking both time as well academic discipline dimension into the account. However, no limitation was put on the type of scientific output, and the cut-off point for the analysis was the content of the database on February 28, 2019.

Results

Table 1 presents the results of our content analysis. The research output presents total number of hits in the topic category, total number of hits that appeared since 2015 and the number of hits associated with the two academic fields with the largest number of associated hits.

Table 1. The appearance of city labels in the literature (Sources: Web of Science Core Collection, 2019; author's compilation)

| Label | Number of hits in the topic (total) | Number of hits in the topic (since 2015) | Two WoS categories with largest number of hits (number of hits in brackets) | |
|------------------------|-------------------------------------|--|---|--|
| | | | First | Second |
| Creative city | 364 | 219 | Urban Studies (151) | Geography (97) |
| Sustainable city | 751 | 449 | Urban Studies (189) | Green & Sustainable Science & Technology (169) |
| Green city | 256 | 152 | Urban Studies (57) | Environmental Sciences (41) |
| Knowledge city | 114 | 41 | Urban Studies (46) | Regional & Urban Planning (31) |
| Resilient city | 127 | 90 | Urban Studies (40) | Environmental Sciences (24) |
| Strategic city | 20 | 11 | Urban Studies (4) | Geography (3) |
| Information city | 31 | 12 | Urban Studies (5) | Architecture (5) |
| Eco city | 379 | 223 | Environmental Sciences (99) | Urban Studies (83) |
| Low-carbon city | 317 | 173 | Environmental Sciences (103) | Energy Fuels (85) |
| Clean city | 32 | 21 | Environmental Sciences (5) | Architecture; Computer Science Information Systems; Economics (each 4) |
| Smart sustainable city | 23 | / | Green & Sustainable Science & Technology (11) | Environmental Sciences (10) |
| Ubiquitous city | 45 | 9 | Telecommunications (14) | Computer Science Information Systems (13) |
| Digital city | 283 | 101 | Computer Science Theory & Methods (61) | Computer Science Information Systems (61) |
| Intelligent city | 112 | 65 | Computer Science Theory & Methods (17) | Engineering, Electrical & Electronic; Management (each 13) |
| Smart city | 4,741 | 4,136 | Engineering, Electrical & Electronic (1388) | Computer Science Information Systems (977) |

The results shown in the table indicate that the label of 'smart city' prevails in the literature by far the most among the above-listed 15 city labels, followed by the labels 'sustainable', 'eco' and 'creative' city. As of February 28, 2019, the label smart city has appeared in 4,741 hits within the topic field of the database. Interestingly, all other labels together do not have as many hits as this label, which suggests a very large popularity of the label.

This popularity is, however, very recent, since more than 4,100 hits correspond to the year 2015 and later. It might be argued that smart city label is the most frequently used label among other (more or less) closely related concepts, yet the time dynamics is also interesting. The popularity of this label is very contemporary. Actually, if we scrutinise the time component, we can see that the label 'sustainable city' prevailed until 2012 (the number of total hits in topic category 256 versus 244 in favour of 'sustainable city' label), after it was only surpassed by the label 'smart city' in 2013. However, the gap between the two labels has substantially increased already in 2014 (604 versus 299 hits in topic category in favour of the label smart city), and afterwards this gap has widened even more (see WoS, 2019).

The utilisation of the label 'smart city' has received a large increase in popularity just recently. This means that also scientific literature is contributing to its popularity, although it would be interesting to determine the causality, but this goes beyond the scope of this study. The inspection of time dynamics also reveals that some labels have been increasingly appearing in the literature, and others facing the opposite trend. For instance, the label 'resilient city' can be found in 90 items after 2015 and has surpassed the label 'knowledge city' with only 41 new hits since 2015. The same is valid for the label 'ubiquitous city', with just 9 new hits after 2015. In contrast, apparently after 2015 the new label has been coined, i.e. smart sustainable city, which even did not exist in the scientific literature covered by WoS database before 2015.

Furthermore, if we relate hits to the category component, we can observe that variations exist in which academic fields a particular label appears more often. We can actually point out three major clusters of labels. The first cluster of labels is related to the category 'Urban Studies'. The relative majority of labels creative city, sustainable city, green city, knowledge city, resilient city, strategic city and information city belong to this category when categorised to particular scientific output. The second cluster of labels corresponds to the category 'Environmental Sciences', where the relative majority hits associated with labels eco city, low-carbon city and clean city can be found. We can also add the label 'smart sustainable city' to this category. The third cluster of labels can be described as the 'technical cluster', where the use of labels ubiquitous city, digital city, intelligent city and smart city prevails. These labels have been mostly related to the categories Electrical & Electronic Engineering and Computer Science Information Systems.

Thus, variations exist in the appearance of specific city labels, their popularity as well as their affiliation to particular academic fields. For instance, labels smart, digital and intelligent city are more often used in the technical literature, and we might consider them as more technical labels. On the other hand, the labels 'creative', 'sustainable', 'knowledge' and 'resilient' have more soft and social sciences related connotation, and the authors from these academic fields might prefer them. Finally, it seems that labels 'eco', 'low-carbon' and 'clean' tend to imply more environmentalist perspective of modern cities, so the authors from those academic fields might prefer them. However, the clear-cut division among the clusters might not be so straightforward. This holds if we scrutinise also the second academic field with the most hits related to a particular label. Academic fields of social sciences and environmental sciences have particularly thin line of division, given the observed overlapping of these two fields (see the last column in the table).

Conclusions

City labelling has become increasingly popular mostly due to the urbanisation trends, although the research on this labelling phenomenon is still lacking. The debate exists in the literature on the suitability of different city labels and terminology used. There is also a question how frequently specific labels appear in the literature. By investigating 15 different city labels we have found out that the appearance of labels in the literature differentiates. This means that some labels are more popular than others. Moreover, also time dynamics is important, as some labels have emerged and have become popular later than others. The appearance of labels also varies between different academic fields, and we can speculate that the above-listed 15 labels can be categorised in three main clusters of labels.

The label 'smart city' appears most frequently in the literature, and by a very large margin, although this popularity is very recent. The possible explanation for this recently evolved popularity could be that this term might be much more politically and technologically neutral; it includes also social and sustainable dimensions; and it represents some sort of utopia that could easily be applauded given the positive connotation of the word 'smart' per se (see also Eremia *et al.*, 2017; Grossi & Pianezzi, 2017).

Nevertheless, a more in-depth investigation of this labelling phenomenon, also by scrutinising other important scientific databases, would be highly appreciated. The research could also be upgraded by adding latent content analysis approach to boost the validity of research results. However, this study gives an important input into the understanding of the development and utilisation of different city labels, which is important from the perspective of their popularity. The research indicated that city labelling is a rather dynamic process, since some labels are gaining and other labels are losing their

popularity in time. And new city labels might emerge also in the future, partially also to accommodate the necessity of terminological innovativeness.

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